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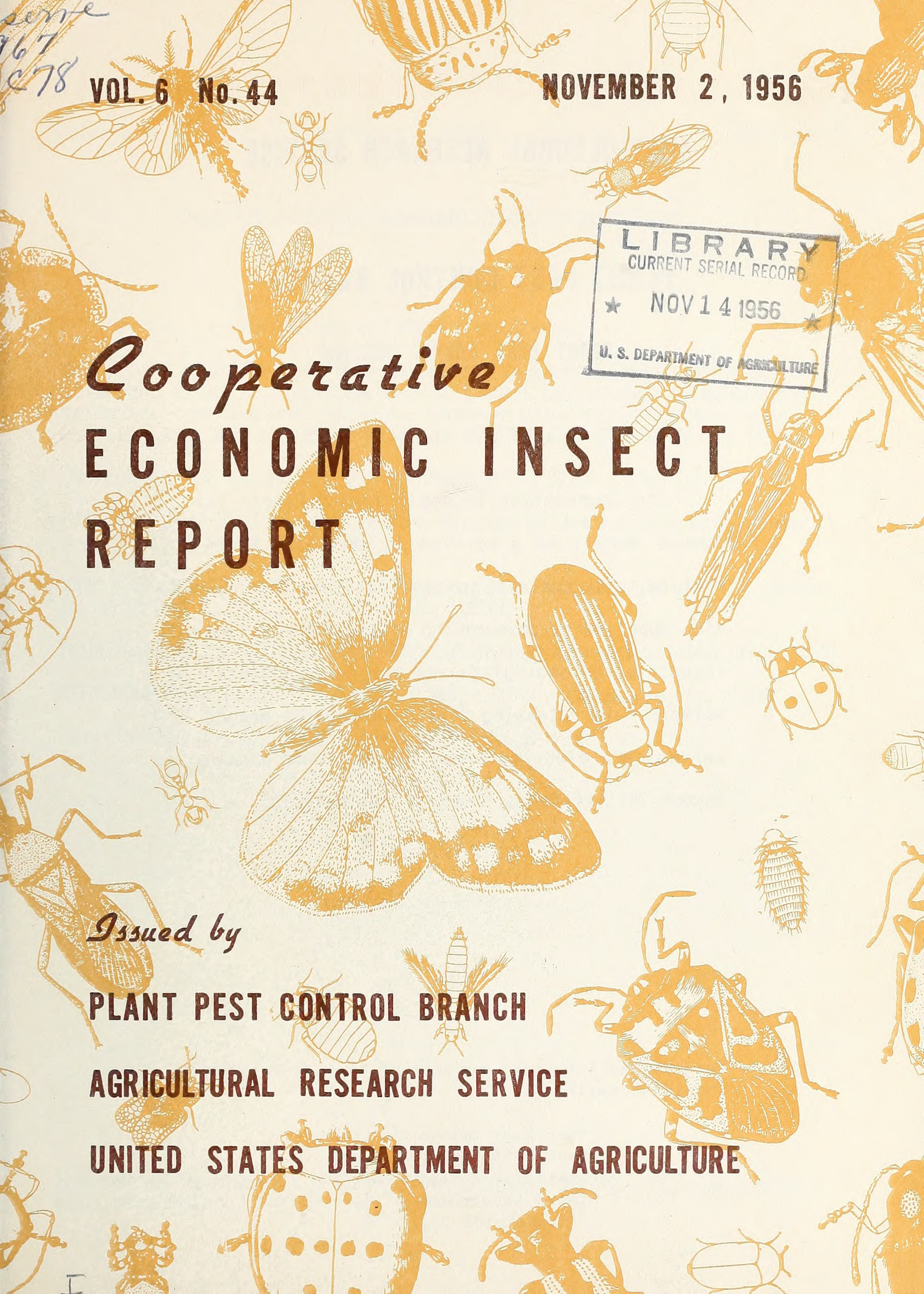

Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL BRANCH
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Branch
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Volume 6 November 2, 1956 Number 44

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

SPOTTED ALFALFA APHID increasing in Lyon County, Nevada, in scattered areas of Oklahoma and northwest Louisiana. Infestations severe in southwestern Illinois. Damage reported in some counties of Tennessee and continues in areas of Utah and Nebraska. (p. 1024).

VETCH BRUCHID reported from Kansas for first time. (p. 1025).

FIELD CRICKETS causing severe damage to truck crops in Imperial Valley, California. (p. 1026).

BOLL WEEVIL combined with dry weather caused poor yield of cotton in two South Carolina counties. (p. 1027).

Brief summary of KHAPRA BEETLE survey and eradication. (p. 1028).

SUMMARY OF INSECT CONDITIONS - 1956 - Delaware. (p. 1031).

Distribution of RANGE GRASSHOPPERS. (p. 1036).

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Reports in this issue are for the week ending October 26 unless otherwise designated.

WEATHER OF THE WEEK ENDING OCTOBER 29, 1956

The air, relatively quiet over the United States during most of October, stirred into great activity last week. The result was "Old Man Winter's" first full scale dress rehearsal of the season in the Far West, and widespread precipitation which skipped only the southern portions of the drought areas in the Great Plains and Southwest. The storm centered over the Southeast at the beginning of the period moved up the coast the following 2 days producing 1 to 2 inches of rain in coastal areas and 1/2 inch as far west as the Appalachians. The week's main storm moved into the Pacific Northwest on the 23rd, bringing heavy rains to coastal areas and the first general precipitation to the Great Basin in several months. Precipitation totals ranged from 1/2 to over 1 inch west of the Divide as far south as northern portions of California, Nevada, and Utah, and also in central Wyoming. Much of this moisture fell as snow, particularly in the mountain ranges. In Utah, the total fall during the storm was 19 inches at Alta and 24 inches in the mountains near Tooele. Snow fell also in Colorado, Wyoming, northwestern Kansas, and up to 6 inches was reported in the Black Hills of South Dakota. This storm developed strong intensity over the Mountain States on the 24th, and the flow of cold northern air in its wake lowered the mercury to near the zero point at several stations in the Great Basin and Rocky Mountains. At the same time strong winds (up to 50 m. p. h.) whipped up several duststorms in the western Plains, causing some damage to winter grains before the oncoming showers ended the dust hazard and furnished enough surface moisture for germination and growth of small grains in most sections as far south as Kansas, but much more rain is needed. As the storm continued eastward showers (mostly moderate to heavy) which were general east of the Great Plains were very beneficial from the Mississippi to the Appalachians. As the period ended a second storm had moved into the Great Plains, bringing moderate to heavy amounts as far south as central Texas and light amounts over all of New Mexico and Colorado. And a third storm was moving into the Pacific Northwest where moderate to heavy precipitation was still falling. Temperatures for the week averaged below normal west of a line joining Pembina, North Dakota, and El Paso, Texas with departures as much as 9° in southern Idaho. The week averaged unseasonably mild in the remainder of the country with only slight departures in the South increasing to 6° or 7° in the Great Lakes region and Northeast. (Summary Supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - SOUTH DAKOTA - Egg survey of northeastern area showed non-economic ratings but one stop in Day County and two stops in Grant County showed ratings light to threatening. *Melanoplus femurrubrum* dominant species. (Hantsbarger). UTAH - Still moderately numerous on rangeland in mountains of Cache and Rich Counties. (Knowlton).

EUROPEAN CORN BORER (*Pyrausta nubilalis*) - SOUTH DAKOTA - Fall infestation survey shows a lower population than in 1955. Averages for areas not previously reported are as follows: northeast, 32 percent with 44 per 100 plants and north central, 32 percent and 48 borers per 100 plants. (Hantsbarger). NORTH DAKOTA - Fall abundance survey in four districts showed average infestations of 48, 47, 34 and 36 percent. Population down considerably in major corn counties. (Goodfellow). VIRGINIA - Average number of borers per 100 plants in 20 counties was 171 compared with 158 in 22 counties in 1955. (Morris).

SOUTHERN CORNSTALK BORER (*Diatraea crambidoides*) - NORTH CAROLINA - Survey in four eastern counties showed as high as 11 of 25 stalks examined infested. Highest counts in Wilson County. (Farrier).

CORN EARWORM (*Heliothis zea*) - NEVADA - Severe populations in most field corn in Moapa Valley, Clark County. (Gallaway). SOUTH CAROLINA Some fields of soybeans completely destroyed, largely by this species, September. (Nettles).

FALL ARMYWORM (*Laphygma frugiperda*) - TEXAS - Medium local infestation on oats in Washington County. (Stufflebeme). LOUISIANA - Occasional larva in oats and wheat in East Feliciana and East Baton Rouge Parishes. (Oliver).

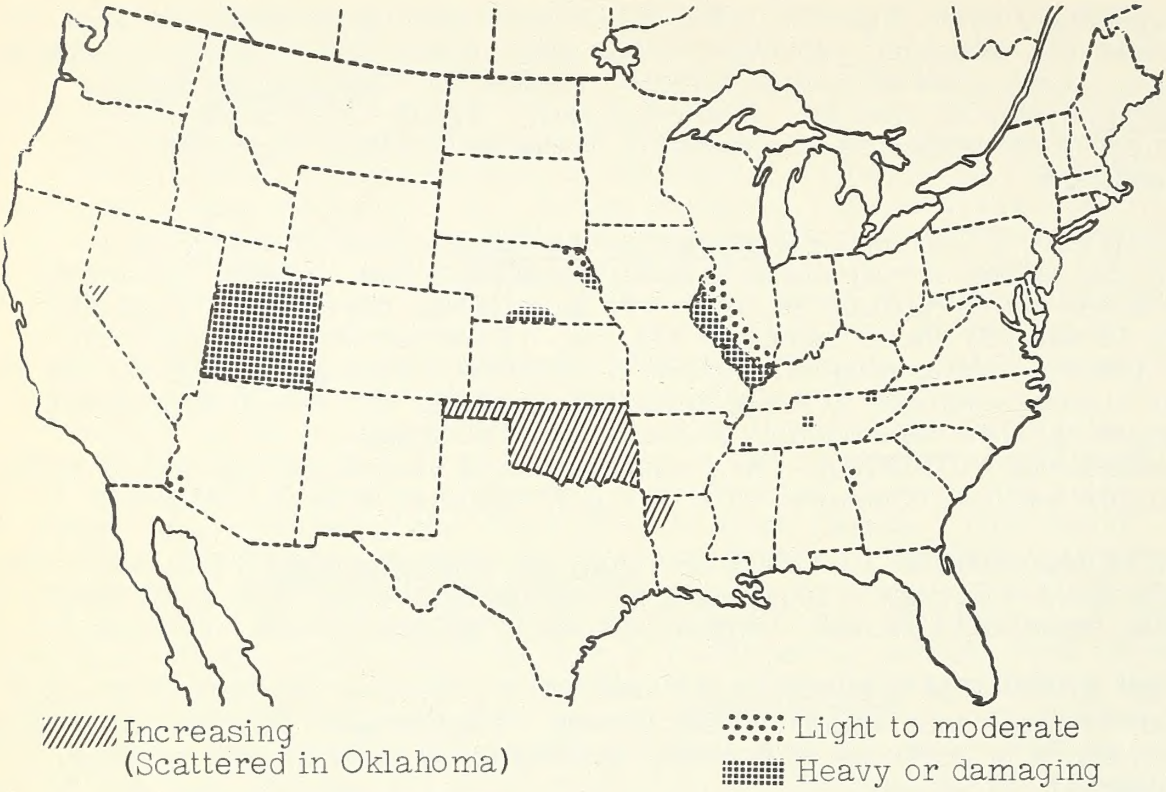
BROWN WHEAT MITE (*Petrobia latens*) - UTAH - Appearing on some fall wheat in Salt Lake County. (Knowlton).

CORN LEAF APHID (*Rhopalosiphum maidis*) - OKLAHOMA - Hundreds per plant on late-planted, green sorghum in Blaine County. (Coppock).

CHINCH BUGS - OKLAHOMA - Present some fields of late sorghum in northern and central areas. No heavy populations. (Coppock).

A CHINCH BUG (*Blissus leucopterus insularis*) - FLORIDA - Nymphs and adults 100 per square foot of sod with a webworm, *Pachyzancla phaeopteralis*, at one per square foot of St Augustine grass at Winter Haven, Polk County, October 14. (Wesson).

Spotted Alfalfa Aphid as Reported Week Ending October 26



SPOTTED ALFALFA APHID - NEVADA - Very rapid build-up to economic numbers in Lyon County, first found infested week of Sept. 8. (Batchelder). SOUTH DAKOTA - Found for first time in Lyman County at two per ten sweeps bringing total to 22 counties infested. (Hantsbarger). ARIZONA - Sticky-board traps indicate some flights in Yuma area. Survey last September and first of October showed occasional field with ten per trifoliate leaf in Yuma area with most fields infested. Where insecticides used during summer, populations were not heavy. (Ariz. Coop. Rept.). OKLAHOMA - Populations non-economic most areas but building up scattered areas. Highest populations in northern and western areas were 475 per ten sweeps in Payne County. Lady beetles static most areas. (Coppock). NEBRASKA - Damage to alfalfa continues in Republican Valley with counts 100-1000 plus per sweep in most fields. In the northeast, populations diminished somewhat with counts 28-90 per ten sweeps. Some fall seedings through Dodge, Burt and Thurston Counties had 0-8 per trifoliate leaf. A portion of a heavily infested field in Merrick County completely free of aphids due to huge populations of Hippodamia convergens, averaging 50 per crown area. (Hill, Andersen). ILLINOIS - Survey showed the following: severe infestation in counties in area south and southwest on diagonal from White to Hancock County moderate in area further north from Lawrence northwest to Mercer and north to Whiteside; and none to light in area north of this line from Edgar County to Woodward and north to Carroll. (Ill. Ins. Rept.). GEORGIA - Light infestation in Polk and Carroll Counties

Oct. 19. (Johnson). LOUISIANA - Building up in alfalfa in northwestern area. Most fields examined have moderate infestations, considerable increase from previous week. Huge populations of *Hippodamia convergens*, *Collops balteatus*, *Nabis ferris*, *Chrysopa oculata* and syrphid flies. (Oliver). MINNESOTA - Found for first time in Brown County, bringing total counties infested to ten. (Minn. Ins. Rept.). UTAH - Populations continue high on succulent alfalfa many parts of State as far north as Davis County. (Knowlton). TENNESSEE - Found in three more counties, Rutherford, Scott and Fayette. Damaging seeds in these counties. (Mullett).

PEA APHID (*Macrosiphum pisi*) - UTAH - Populations continue high on succulent alfalfa, often with spotted alfalfa aphid. (Knowlton).

THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) - LOUISIANA - Populations remain static with 126-200 per 100 sweeps in alfalfa in Bossier and Caddo Parishes. (Oliver).

POTATO LEAFHOPPER (*Empoasca fabae*) - OKLAHOMA - Up to three adults per ten sweeps in Logan County alfalfa. (Coppock). NEBRASKA - "Hopperburn" evident most alfalfa fields throughout northeastern area with counts of leafhoppers 3-6 per plant. (Andersen).

LYGUS BUGS (*Lygus* spp.) - NEBRASKA - Counts of *L. lineolaris* remain high in Republican Valley and average 22 per sweep in alfalfa fields. In northeast area, counts average 15 per sweep. (Andersen).

CLOVER SEED CHALCID (*Bruchophagus gibbus*) - UTAH - Damaged alfalfa seed crops this season. (Knowlton).

VETCH BRUCHID (*Bruchus brachialis*) - KANSAS - Light but general infestation on vetch one farm near Altamont, Labette County, Sept. 12. Collection made in Pottawatomie County earlier. (Matthew). According to available files, first report of this species from Kansas.

A WHITE GRUB (*Ligyrus subtropicus*) - FLORIDA - Larvae infesting several types of lawn grasses in Redlands area of Dade County. Apparently becoming more prevalent there. (Denmark, Oct. 16).

BEAN LEAF BEETLE(*Cerotoma trifurcata*) - LOUISIANA - On green soybeans at about 200 per 100 sweeps in Tensas Parish. (Oliver).

FRUIT INSECTS

APPLE MAGGOT (*Rhagoletis pomonella*) - WEST VIRGINIA - Heavy on apples in Webster County. (Dorsey, Hansen, Gillespie).

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) - CALIFORNIA - In 41 counties, 1211 traps have captured no specimens. (Cal. Coop. Rept., Oct. 20).

SPIREA APHID (*Aphis spiraecola*) - FLORIDA - Nymphs and adults averaging 75-100 per leaf of loquat at Macclenny, Baker County, Oct. 11. (Holder).

TRUCK CROP INSECTS

CABBAGE LOOPER (*Trichoplusia ni*) - LOUISIANA - Populations declined on cole crops but remain threat some areas of Concordia, Tangipahoa and East Feliciana Parishes. (Oliver).

BEET LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - From Oct. 3-17, 210,000 acres of Russian-thistle were sprayed by airplanes in Kern, Kings and Fresno Counties. Counts show 98-99 percent kill of leafhoppers in area. (Cal. Coop. Rept., Oct. 20).

DARKLING BEETLES - NEVADA - Over 1000 beetles taken in black traps in two hours in a Clark County sugar beet field. (Gallaway).

SUGAR-BEET ROOT APHID (*Pemphigus betae*) - UTAH - Damage to sugar beets moderate to light in many recently-dug fields. (Knowlton).

TOMATO RUSSET MITE (*Vasates lycopersici*) - TEXAS - Light local populations on several tomato plants in Smith County and heavy local infestation on tomato plants in Cherokee County. (Young).

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - ALABAMA - Additional infestation in Conecuh and Monroe Counties. Several properties in Baldwin and Mobile Counties released from quarantine. (Owen). MISSISSIPPI - Infested sweetpotatoes received Adams County, Oct. 19. Extent of infestation being determined. (Hutchins).

SOUTHERN GREEN STINK BUG (*Nezara viridula*) - LOUISIANA - Infesting fall potatoes in Tangipahoa Parish and causing considerable damage. (Oliver).

MELON FLY (*Dacus cucurbitae*) - CALIFORNIA - Over 8000 traps in service in Los Angeles County and maintained by State, Federal and County personnel. No finds have been made since one female collected in August 1956. (Cal. Coop. Rept., Oct. 20).

FIELD CRICKET (*Acheta assimilis*) - CALIFORNIA - Upward of 800,000 acres reported infested in Imperial Valley with severe damage to numerous truck crops. (Cal. Coop. Rept., Oct. 20).

Spinach Insect Situation, Bixby Experiment Station, Oklahoma

Foliage collections from 200 spinach plants showed eight eggs and ten larvae of *Hylemya cilicrura* and 11 first and second-instar larvae of *Pachyzancla bipunctalis*. Examination of soil from six linear feet of row revealed no infestations of *H. cilicrura*. (Walton, Arbuthnot).

A MUSHROOM MAGGOT - NEVADA - Serious damage to cultivated mushrooms at Las Vegas. (Lauderdale).

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - SOUTH CAROLINA - Cotton crop about 50 percent off due to weevils and dry weather in Anderson County. Crop very poor in Spartanburg due to same combination. (Nettles et al.).

BOLLWORMS (Heliothis spp. et al.) - NEVADA - Economic populations in individual fields of Clark County and very light in Nye County, Oct. 7. (Gallaway).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Cotton gin trash surveys for pink bollworm underway in Kern, Kings, Tulare and Fresno Counties. Boll inspections also being made. No pink bollworm has been found in California. (Cal. Coop. Rept., Oct. 20). NEVADA - Field inspection of 2231 green bolls from 2088 acres in southern area showed no infestation, week of Oct. 7. (Gallaway). TEXAS - Light infestation in cottonseed in the field in Erath County. (Sanchez). OKLAHOMA - A total of 57 samples from 219 bushels of trash in the 16 major cotton-producing counties produced 1669 live and 504 dead larvae. In 14 counties, 27 gin stand inspections yielded two live and 515 dead larvae and in eight southern and western counties, 24 lint cleaner inspections yielded one live and 162 dead larvae. (Fed.-State PBW Prog.). ALABAMA - Gin trash and lint cleaner inspections completed in 35 counties in southern, western and northern areas were all negative. (Owen).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

APHIDS - NEVADA - Severe infestation on black willow trees at Truckee Meadows, Washoe County. (Gallaway).

AN APHID (Longistigma caryae) - FLORIDA - Nymphs and adults averaging many per stem of laurel oak at Bartow, Polk County, Oct. 14. (Haddox).

CITRUS WHITEFLY (Dialeurodes citri) - VIRGINIA - Heavy on outdoor gardenias at Norfolk. (Rowell).

CAMELLIA SCALE (Lepidosaphes camelliae) - VIRGINIA - Heavy on outdoor camellias at Norfolk. (Rowell).

A PHALAENID (Melipotis acontioides) - FLORIDA - Larvae averaging 1000 per royal poinciana on three inspected at Ft. Pierce, St. Lucie County, Oct. 8. (Campbell).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - LOUISIANA - Populations of Aedes sollicitans, Aedes spp. Anopheles sp. and Culex sp. heavy in Livingston and Cameron Parishes. (Oliver).

BLACK FLIES - UTAH - Have been unusually numerous in parts of Salt Lake, Weber, Box Elder and Cache Counties in recent weeks. (Knowlton)

A STRATIOMYIID (Hermetia illucens) - ARIZONA - Larvae recovered from stools of Tucson resident in early October. Larvae pupated and emerged a week later. (Ariz. Coop. Rept.).

STORED GRAIN INSECTS

Khapra Beetle Progress Report

Khapra beetle survey has been conducted in 35 States with total of 40,672 sites being inspected. Of this total, 37,620 sites have been in the three known infested States of Arizona, California and New Mexico. Some sites have been reinspected two or more times for a total of 17,275 reinspections. Additional inspections have been made on approximately 1,000 sites in Mexico. Survey activities are being increased this fall and winter. The table below shows the cumulative treatment summary for khapra beetle eradication. The figures are as of September 30.

State	Tot. Inf. Sites	Tot. Vol. Cu. Ft.	Sites Tr. & Released	Vol. Tr. & Released	Methyl Br. Used lbs.
Ariz.	125	52,500,500	82	39,912,226	251,438
Cal.	278	70,957,000	244	61,259,082	529,616
N. M.	5	415,400	5	415,400	3,680
Mexico	38	11,580,000	11	2,603,473	20,360
Totals	446	135,452,400	342	104,190,181	805,094

(PPC).

Additional Note on Khapra Beetle

CALIFORNIA - Between October 8-20, two new infestations were found, one in a dairy in Fresno County and one in stock-feeding business in Kern County. Eight properties fumigated and eight released from regulation during this period also. (Cal. Coop. Rept.).

STORED GRAIN INSECTS - OKLAHOMA - Three seed and feed warehouses inspected week of Oct. 8 in Garfield County showed severe infestation of COWPEA WEEVIL in cowpeas in one site. A light infestation of ANGOUMOIS GRAIN MOTH present in all three warehouses. (Coppock, Owen). NORTH CAROLINA - About five percent of newly-harvested corn from eastern counties received at a large elevator was damaged by weevils. Infestation particularly in early-maturing varieties and damage overall 2-3 times worst than in 1955. (Jones, Farrier).

BENEFICIAL INSECTS

LADY BEETLES - UTAH - Adults and sometimes larvae still-moderately numerous in some aphid-infested alfalfa fields, with *Chrysopa* sp. also present in some fields. (Knowlton).

A PARASITE (*Aphytis maculicornis*) - CALIFORNIA - Based on freedom from olive scale attack, olive scale was reduced to non-economic proportions where no outside interference from insecticides occurred and where parasites had four years to build up. (Cal. Coop. Rept., Oct. 20).

MISCELLANEOUS INSECTS

YELLOW JACKETS - UTAH - Numerous and entering homes and sometimes annoying deer hunters in mountains. (Knowlton).

CLOVER MITE (*Bryobia praetiosa*) - NEVADA - Migration into homes sufficient to require control in Washoe County. (Gallaway).

TERMITES - WEST VIRGINIA - Causing floor to collapse in high school gymnasium in Roane County. (Dorsey, Hansen, Gillespie).

BOXELDER BUG (*Leptocoris trivittatus*) - NEVADA - Dense swarms invading homes in western area. (Gallaway). VIRGINIA - Large masses in rural retreat area of Wythe County. (Vaugh, Morris).

LIGHT TRAP COLLECTIONS

	Pseud.	Agrotis	Prod.	Perid.	Feltia	Heliothis		Protoparce		Laphyg.
	unipun.	ypsilon	ornith.	marg.	subt.	zea	vires.	sexta	quinq.	frugip.
NEBRASKA (Counties)										
Scotts Bluff 10/15-20	19	33				57				
Lincoln 10/14-20	26	50				585				
TENNESSEE (Counties)										
Shelby 10/16-22	36	16		6		136				
Madison	6	1				6				3
Maury	34	8	4			114			3	6
Robertson	15	6		1		70			2	6
Cumberland	3	6		2		17			1	5
Knox	28	1	1	1		1				
Greene	65	8	17	4		37	1		4	5
Blount	16	7	3			28	1			8
Marion	6	15				17				7
Johnson	104	14	20	13		3				5
NORTH CAROLINA (Counties)										
Duplin 10/24-25	4				3	7				
Johnston 10/24-25	1	1								
SOUTH CAROLINA (Counties)										
Oconee 10/14-20	5		3			2				1
Florence 10/13-19	122	12	14	4	22	10	1			2
Charleston 10/8-14	18	26	8		18	25	4		2	8
GEORGIA (Counties)										
Spalding 10/19-25	41	13		3	13	35				27
Tift 10/19-25	25	2			3	9				
FLORIDA										
Belle Glade 10/17-19						17				
Homestead 10/19					6					
Quincy 10/15	9	15			7			1		
Gainesville 10/17	9	4			4					
ALABAMA (Counties)										
Lee 10/20-26	70					37				12
Baldwin 10/17	4					1				
LOUISIANA										
Curtis 10/15-21	277		12	4	80	68	4		2	12
Baton Rouge 10/19-26	16	16	10	2	58	45	2			8
Franklin 10/18-24	5		9		49	15	2			28
TEXAS										
College Station 10/20-26	12	3	4			104				12
Waco 10/20-26	4		2	15	18	150				

SUMMARY OF INSECT CONDITIONS - 1956

DELAWARE

Reported by H. E. Milliron

Corn Insects: EUROPEAN CORN BORER (*Pyrausta nubilalis*) survival was heavy in stalks and stubble in late March-early April. Injury by small borers heavy on sweet and advanced field corn in the Harrington-Bridgeville area by June 9-15, thereafter becoming conspicuous throughout State, especially on sweet corn. The fall-abundance survey revealed about same heavy population (243 borers per 100 plants) as in the preceding season and an estimated loss of approximately 660, 000 bushels valued at $950, 000. DULL SAP BEETLE (*Carpophilus lugubris*) adults first appeared during last week of June; more abundant and destructive than usual on corn throughout State. SEED-CORN MAGGOT (*Hylemya cilicrura*) was less destructive to corn than usual. ARMYWORM (*Pseudaletia unipuncta*) caused no serious losses anywhere. CORN FLEA BEETLE (*Chaetocnema pulicaria*) was very prevalent in late July and early August. Less destructive generally than in preceding season. CORN EARWORM (*Heliothis zea*) was responsible for usual injury to early sweet corn, less on mid-season varieties and generally severe in late garden plantings. Except for early infestations in whorls and tassels, notably much less abundant generally in field corn than for past six seasons. Estimated total season's cost due to this pest was about $100, 000, including all crop loss and control expenditures. CUTWORMS (*Agrotis ypsilon* and *A. gladiaria*) injury was very light compared with 1955. GRASSHOPPERS (*Melanoplus* spp.) caused light damage at some places in July. JAPANESE BEETLE (*Popillia japonica*) was troublesome in northern Sussex County on silks and leaves during July. CORN LEAF APHID (*Rhopalosiphum maidis*) was more destructive throughout the State than for past six seasons. FALL ARMYWORM (*Laphygma frugiperda*) was lighter than normal.

Cereal and Forage Insects: ARMYWORM was somewhat less abundant than last season; light, spotty infestations in wheat, barley and rye. Moderate injury to rye and wheat noted on Primehook Neck during early June. ALFALFA WEEVIL (*Hypera postica*) inflicted moderately heavy to severe damage to untreated, first-growth alfalfa throughout the State in May and early June, later to second growth at numerous locations. Pest prompted much early cutting to prevent heavier losses. Estimated hay lost was 4000 tons, valued at $126, 000; control expenditures approximately $24, 000. PEA APHID (*Macrosiphum pisi*), though abundant everywhere on alfalfa and clovers in May, much less destructive generally than in 1955. CLOVER LEAF WEEVIL (*Hypera punctata*) was less severe than in preceding season. LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) was season's most important pest of red clover. Very injurious to tips and buds in late May and early June, causing a loss of at least 50 per cent of blooms at some places. MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) was unusually abundant or destructive on forage legumes. TARNISHED PLANT BUG (*Lygus lineolaris) was more numerous than for several years in alfalfa and clovers throughout season. MEADOW PLANT BUG (Leptoterna dolabratus) was unusually abundant in red clover and clover grass mixtures during May. POTATO LEAFHOPPER (Empoasca fabae) population on forage legumes heavier than in preceding season; severe yellowing of alfalfa noted. GREEN CLOVERWORM (Plathypena scabra) caused light to moderately heavy injury to alfalfa generally.

Soybean Insects: STRAWBERRY SPIDER MITE (Tetranychus atlanticus) was light generally in Sussex County, with only moderately severe injury near Bridgeville, in contrast to numerous instances of severe damage the preceding season. BEAN LEAF BEETLE (Cerotoma trifurcata) was numerous throughout Kent and Sussex Counties without causing serious damage except to seedlings. GRASSHOPPERS (Melanoplus spp.) was responsible for partial defoliation at many widely scattered locations. JAPANESE BEETLE (Popillia japonica) usual numbers fed heavily on foliage at some locations. POTATO LEAFHOPPER (Empoasca fabae) was abundant everywhere, July and August.

Vegetable Insects: CABBAGE APHID (Brevicoryne brassicae) was very destructive to small plantings in Georgetown area. IMPORTED CABBAGEWORM (Pieris rapae) was somewhat more numerous generally than in 1955; major lepidopterous pest of cabbage and kale during most of season. AN INTRODUCED FLEA BEETLE (Phyllotreta cruciferae) was responsible for about same degree of statewide damage to cole crops reported previous year. CABBAGE LOOPER (Trichoplusia ni) was troublesome on cruciferous crops and infested tomatoes generally causing noticeable foliage injury. MEXICAN BEAN BEETLE (Epilachna varivestis) was chiefly a problem on beans in home gardens. Few cases of light, to moderately severe, spotty injury to commercial snap and lima beans. BEAN APHID (Aphis fabae) was less troublesome than in preceding season. GREEN CLOVERWORM (Plathypena scabra) caused light defoliation of limas generally. BEAN LEAF BEETLE (Cerotoma trifurcata) was not unusually abundant or destructive to beans. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) occurred in moderate numbers on beans. PEA APHID (Macrosiphum pisi) was light to moderately abundant in commercial peas from Middletown southward in June. Required considerable control. TOBACCO HORNWORM (Protoparce sexta) was unusually light throughout the State on tomatoes, except in large acreages near Canterbury. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) was a common, destructive pest on untreated potatoes and tomatoes throughout State, requiring much control. Numerous cases of partial to complete defoliation of tomatoes in Sussex County. POTATO APHID (Macrosiphum solanifolii) was more prominent throughout season on tomatoes generally than for past several years. Widespread on potatoes, requiring control in few cases. CUTWORMS (Agrotis ypsilon and Feltia subgothica) destroyed plants of cabbage, tomato, potato and sweet corn at many places in Kent and Sussex Counties. Estimated 10 percent loss of some tomato plantings. SEED-CORN MAGGOT (Hylemya cilicrura) caused spotty germination of commercial snap beans east of Bridgeville. Destructive to commercial sweet corn in the Georgetown area, necessitating about 30 percent reseeding. CUCUMBER BEETLES

(Acalymma vittata and Diabrotica undecimpunctata howardi) - Former statewide severe pest of untreated cucurbits throughout season. Latter was noticeably less abundant than in preceding season. SQUASH BUGS (Anasa tristis and A. armigera) - Common in Kent and Sussex Counties on cucurbits, without unusual damage anywhere. SQUASH VINE BORER (Melittia cucurbitae) caused serious loss to pumpkin-squash in the vicinity of Dover. POTATO TUBERWORM (Gnorimoschema operculella) reported from Harbeson area, February 16. GARDEN SPRINGTAIL (Bourletiella hortensis) - Early injury prevalent generally on potatoes and tomatoes. Unusually abundant everywhere. POTATO LEAFHOPPER was heavy throughout State on potatoes and beans, beginning mid-June; tipburn common on untreated potatoes in Sussex County. EUROPEAN CORN BORER attacked potatoes generally; numerous severely infested plantings. Also infested pepper near Bridgeville.

Fruit Insects: STRAWBERRY WEEVIL (Anthonomus signatus) was less troublesome generally than in 1955. STRAWBERRY ROOT APHID (Aphis forbesi) injurious in two plantings in Sussex County. GRAPEVINE APHID (Aphis illinoisensis) abundant on new growth late in season near Newark. CODLING MOTH (Carpocapsa pomonella) attack on unsprayed apples heavy by late June. Injury by second-brood larvae generally more severe than that of first. UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) distributed throughout State, was troublesome in May on unsprayed apple foliage in Sussex County. ORIENTAL FRUIT MOTH (Grapholitha molesta) caused usual amount of damage to peaches and apples. PLUM CURCULIO (Conotrachelus nenuphar) occurred in normal numbers. APPLE APHIDS (Rhopalosiphum fitchii, Anuraphis roseus and Aphis pomi) infestations about average except former species more abundant than usual early in the season. ORCHARD MITES (Metatetranychus ulmi and Tetranychus telarius) was prevalent locally; generally less destructive than in 1955. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was responsible for some injury to apple foliage. A WOOLLY APHID (probably Eriosoma lanigerum) was recorded killing young apple trees in Kent County. AMERICAN PLUM BORER (Euzophora semifuneralis) destructive to apple at Woodside and Bridgeville. PEAR BORER (Thamnosphecia pyri) numerous in outer bark of apples, associated with American plum borer at Woodside and Bridgeville. FALL ARMYWORM (Hyphantria cunea) was more conspicuous on apple generally than in 1955. EUROPEAN CORN BORER infested numerous apple twig terminals and fruits at Bridgeville, mid-June.

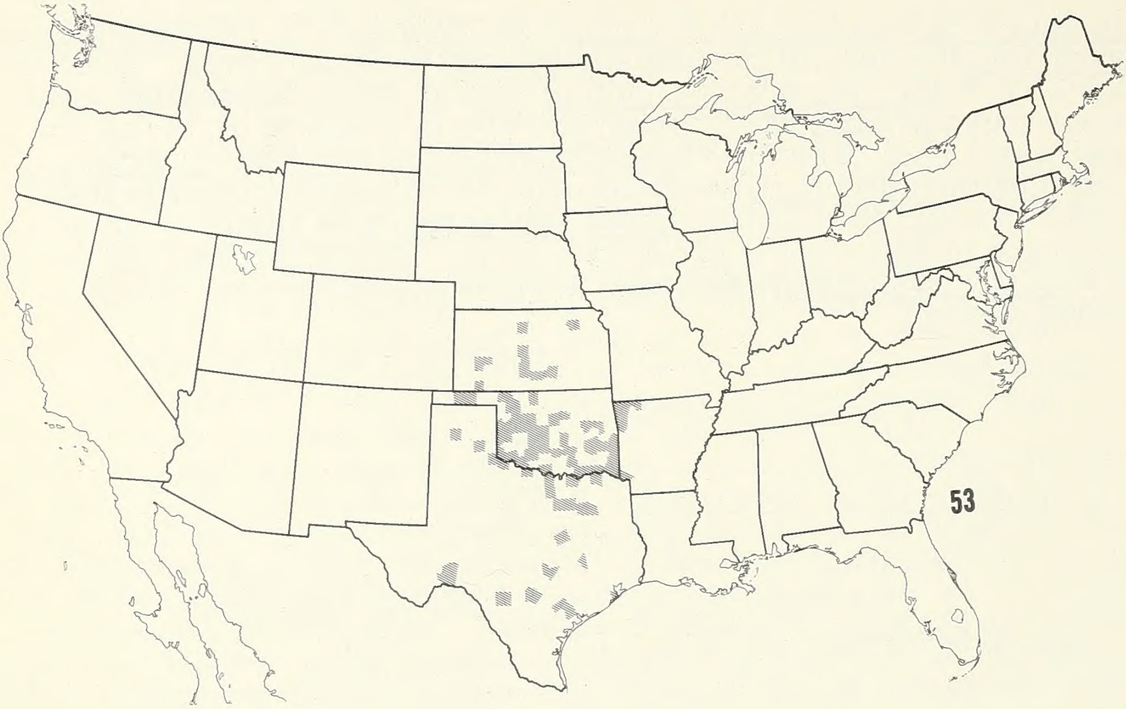
Forest, Ornamental and Shade Tree Insects: PINE TUBE MOTH (Argrotaenia pinatubana) caused conspicuous amount of injury on white pine at Dover in late Jan. A MIDGE (Retinodiplosis inopis) damaged Virginia pine at Petersburg. PINE TORTOISE SCALE (Toumeyella numismaticum) destructive to seedling Virginia pine in the Redden State Forest. PINE NEEDLE SCALE (Phenacaspis pinifoliae) - Some loblolly and Virginia pines heavily infested in the Redden State Forest. PINE SAWFLIES (Neodiprion spp.) caused light to moderately heavy defoliation generally. Less severe than in preceding season. PALES WEEVIL (Hylobius pales) infested Virginia pine seedlings at Petersburg, causing death of some. NANTUCKET PINE MOTH (Rhyacionia frustrana) destroyed growing tips of many loblolly pines over northern two-thirds of the State. PINE APHIDS (Cinara spp.) were abundant on Virginia and loblolly pines in Kent and Sussex Counties. BAGWORM (Thyridopteryx ephemeraeformis) was more destructive than last year on evergreens and deciduous trees throughout State. EASTERN TENT CATERPILLAR (Malacosoma americanum) was more prevalent than last year on wild cherry. BUCK MOTH (Hemileuca maia) defoliating white oak at Petersburg and in Redden State Forest, early June. A BIRCH APHID (Calaphis betulella) was very abundant on Betula nigra at Petersburg during June. ASIATIC OAK WEEVIL (Cyrtepistomus castaneus) adults caused light to moderate damage to oak and chinquapin foliage. WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) was severe on sycamore from Smyrna southward. SWEETGUM WEBWORMS (Salebria afflictella and Tetralopha melanagrammos) were serious on ornamental plantings in vicinity of Dover and southward, less so northward and in all natural stands. WOOLLY ELM APHID (Eriosoma lanigerum) was heavy on many elms in the Smyrna area, June 16. ELM LEAF APHID (Myzocallis ulmifolii) was very abundant and injurious to American elm at Smyrna, early July. ELM LEAF BEETLE (Galerucella xanthomelaena) was abundant and destructive to ornamental elms as usual. JAPANESE BEETLE was severe on rose and on certain trees. SYCAMORE TUSSOCK MOTH (Halisidota harrisii) was important defoliator of ornamental trees in Smyrna area. MIMOSA WEBWORM (Homadaula albizziae) was severe at many locations. NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) produced conspicuous injury in natural stands at Petersburg and in the Redden State Forest. AN OECOPHORID (Psilocorsis faginella, det. by J. F. Clarke) severe on beech in northern Delaware, commonly destroying as much as 50 percent of foliage. ASIATIC GARDEN BEETLE (Autoserica castanea) adults injurious to herbaceous ornamentals some areas. POPLAR TENT MAKER (Ichthyura inclusa) - Aspen and silver poplar partially to completely defoliated. A NOTODONTID (Cerura borealis) defoliated silver poplar at Petersburg in July. GREEN-STRIPED MAPLEWORM (Anisota rubicunda) numerous on red maple at Petersburg. HICKORY TUSSOCK MOTH (Halisidota caryae) caused considerable defoliation of black walnut at Newark. WALNUT CATERPILLAR (Datana integerrima) was severe on black walnut throughout the State. LOCUST LEAF MINER (Chalepus dorsalis) was destructive at Summit Bridge. LOCUST TWIG BORER (Ecdytolopha insiticiana) weakened numerous branches of smaller trees at many locations. YELLOW-NECKED CATERPILLAR (Datana ministra) caused light to severe foliage loss on oaks. More destructive than for several years. ORANGE-STRIPED OAKWORM (Anisota senatoria) responsible for partial defoliation of white oak some areas. BROWN ANISOTA (Anisota virginiensis) was prevalent on various oaks. RED-HUMPED OAKWORM (Symmerista albifrons) unusually common on oaks from Newark to Bridgeville. VARIABLE OAK LEAF CATERPILLAR (Heterocampa manteo) - Local outbreaks caused complete defoliation of oaks. A MITE (Oligonychus bicolor) was heavy on willow oak at Petersburg; elsewhere less destructive than in 1955. FALL WEBWORM (Hyphantria cunea) caused considerably more damage to deciduous trees than in preceding season.

Household and Structural Insects: TERMITES (Reticulitermes spp.) ✓ A statewide problem, costing close to a $1,000,000 annually. At least two, and possibly three, species involved. CLOVER MITE (Bryobia praetiosa) was nuisance in many homes in the Newark-Wilmington areas.

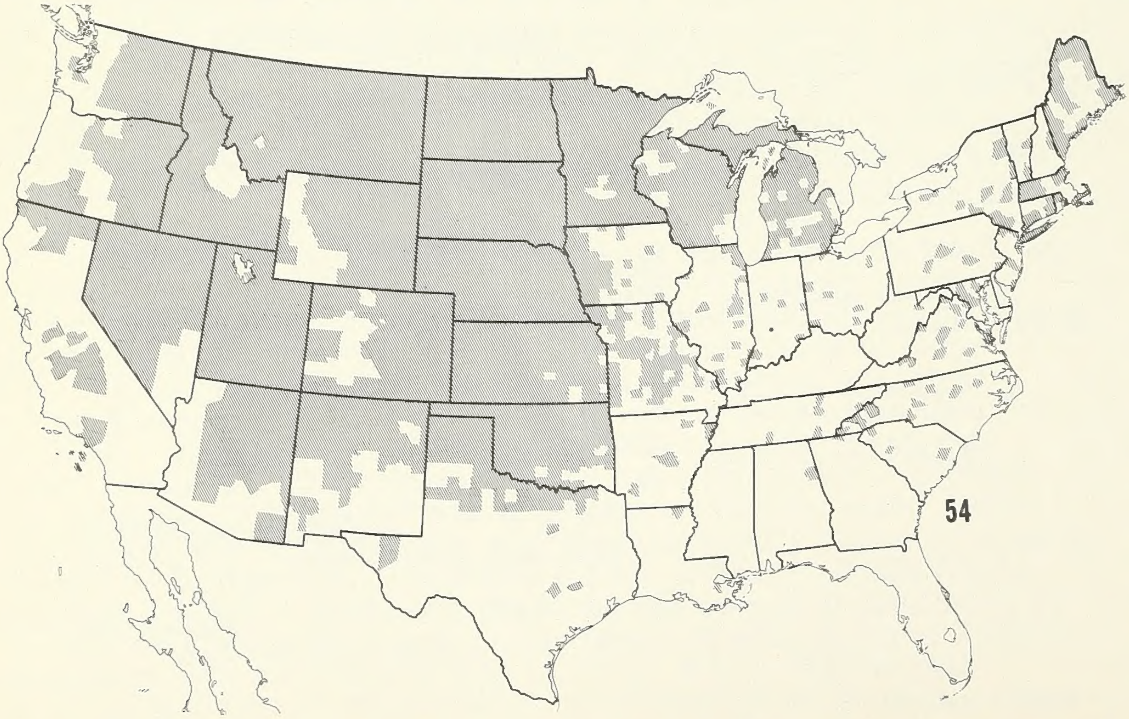
Insects Affecting Man and Animals: BROWN DOG TICK (Rhipicephalus sanguineus) - Several infestations on dogs in Newark area. AMERICAN DOG TICK (Dermacentor variabilis) was abundant in forested area, Petersburg in early May; numerous reports received during spring and early summer. BLACK FLIES (Prosimulium hirtipes, Cnephia mutata and Simulium decorum) were annoying to man during late April-early May. SALT-MARSH MOSQUITO (Aedes sollicitans) was unusually abundant and annoying in Kent County during late July. TROPICAL RAT MITE (Bdellonyssus bacoti) numerous in house at Georgetown, following rodent control.

DISTRIBUTION OF RANGE GRASSHOPPERS

Melanoplus bispinosus Scudder



Melanoplus bivittatus (Say) Two-striped grasshopper



Prepared by Ent. Res. Br., ARS, USDA
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